ease return signed/recorded to; lisbury Madison & Sulio LLP beliedual Property Group oth Floor, Cast Tower 100 New York Avenue, N.W. fashington, D.C. 20006 3918

Atty, Dkt.	PMS 256828	•
•	M#	(1) white
	IVI# 1	Client Ret.

ASSIGNMENT of U.S. Origin Patent Application (to Corporation) (or Limited Partnership)

WHEREAS, the undersigned, to wit:

()	Andrew Fire
<u>2</u>)	Si Q. Xu
3)	Mary K. Montgomery
4)	Stephen A. Kostas
5)	Lisa Timmons
	reinafter collectively ASSIGNOR), has/have made an Invention known as Dkt. PMS 256628 I entitled Genetic Inhibition by Double-Stranded RNA
	which an application for Letters Patent of the United States was executed even date herewith and is about to be filed in the United States Patent and Trademark Office; was filed on December 18, 1998 , Applin. No. 09/ 215, 257 ;
pri	AND WHEREAS The Carnegie Institution of Washington (hereinafter ASSIGNEE), a corporation its nited Partnership duly organized and existing under the laws of the District of Columbia and having its ncipal office and place of business at 1530 P Street, N.W., Washington, DC 20005, desires to acquire an elest therein;

NOW, THEREFORE, in consideration of Ten Dollars (\$10.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the said ASSIGNOR, does hereby sell, assign and transfer unto ASSIGNEE, its successors, assigns and legal representatives, the full and exclusive right, title and interest to the said invention in the United States and all foreign countries, as described in the aforesaid application, and to the said application and to all continuations, divisions, reissues and substitutes of said application, together with the right of priority under the International Convention for the Protection of Industrial Property, Inter-American Convention Relating to Patents, Designs and Industrial Models, and any other international agreements to which the United States of America adheres, and ASSIGNOR hereby authorizes and requests the Commissioner of Patents to Issue said Letters Patent to ASSIGNEE, for its interest as ASSIGNEE, its successors, assigns and legal representatives.

PAT-1140 1167

AND ASSIGNOR hereby agrees to execute any papers requested by ASSIGNEE, its successors, assigns and legal representatives, deemed essential to ASSIGNEE's full protection and title in and to the invention hereby transferred.

ASSIGNOR furthermore agrees upon request of said ASSIGNEF, and without further remuneration, to execute any and all papers desired by said ASSIGNEE for the filing and granting of foreign applications and the perfecting of title thereto in said ASSIGNEE.

NOTE: The undersigned hereby authorizes Plisbury Madison & Sutro I LP of the above address to insert hereon any further identification necessary or desirable for recordation of this document.

Executed on the date(s) below indicated.

Signature	Date Signed	Witness	
Name: Andrew Fire	× 1/15/99	thetiend &	Henry
2) Name: Si Q. Xu			
Name: Mary K, Montgomery			,
4) Name: Stephen A. Kostas			<u></u>
5) Name: Lisa Timmons			

PAT-1140 11/97

Please return signed/recorded to:
Pillabury Madison & Sutro LLP
Intellectual Property Group
Ninth Floor, Eact Tower
1100 New York Avenue, N.W.
Washington, D.C. 20005-3018

<u>___</u>_

Atty. Dkt.	PMS 255628	
	M#	Client Ref.

ASSIGNMENT of U.S. Origin Patent Application (to Corporation) (or Limited Partnership)

WHEREAS, the undersigned, to wit-

1)	Andrew Fire
?) '	Sterxor Sigur Xu
3) ်	Mary K. Montgomery
4) `	Stephen A. Kostas
5)	Lisa Timmons
(hei	reinafter collectively ASSIGNOR), has/have made an invention known as Dkt. PMS 256628
and	entitled: Genetic Inhibition by Double-Stranded RNA
tor	which an application for Letters Patent of the United States
	was executed even date herewith and is about to be filed in the United States Patent and Trademark Office;
XI.	was filed on December 18, 1998 , Appln. No 09/ 215, 257 ;
	·
	AND WHEREAS The Carnegie Institution of Washington (hereinafter ASSIGNEE), 🗵 a corporation 🗍
prit	nited Partnership duly organized and existing under the laws of the District of <u>Columbia</u> and having its notice and place of business at <u>1530 P Street, N.W., Washington, DC 20005</u> , desires to acquire an erest therein;

NOW, THEREFORE, in consideration of Ten Dollars (\$10.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the said ASSIGNOR, does hereby sell, assign and transfer unto ASSIGNEF, its successors, assigns and legal representatives, the full and exclusive right, tittle and interest to the said invention in the United States and all foreign countries, as described in the aforesaid application, and to the said application and to all continuations, divisions, reissues and substitutes of said application, together with the right of priority under the International Convention for the Protection of Industrial Property, Inter-American Convention Relating to Patents, Designs and Industrial Models, and any other International agreements to which the United States of America adheres, and ASSIGNOR hereby authorizes and requests the Commissioner of Patents to issue said Letters Patent to ASSIGNEE, for its interest as ASSIGNEE. Its successors, assigns and legal representatives.

PAT-1148 118/

AND ASSIGNOR hereby agrees to execute any papers requested by ASSIGNEE, its successors, assigns and legal representatives, deemed essential to ASSIGNEE's full protection and title in and to the invention hereby transferred.

ASSIGNOR furthermore agrees upon request of sald ASSIGNEE, and without further remuneration, to execute any and all papers desired by said ASSIGNEE for the filing and granting of foreign applications and the perfecting of little thereto in said ASSIGNEE.

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Executed on the date(s) below indicated.

<u>Signature</u>	Date Signed	Witness
1) Name: Andrew Fire	·	
Name: Si G. Xu	× 1/12/99	× Hun Shoo
3)	·	Hui Shan
Name: Mary K. Montgomery 4)		
Name: Stephen A. Kostas		
5) Name: Lisa Timmons		·

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Pilase return signod/recorded to.
Pilisbury Madison & Sutro LLP
Intellectual Property Group
Nimit Floor, East Tower
1100 New York Avenue, N.W.
Washington, D.C. 20005-3918

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	Mtt	Glient Ref.	
		A HALL LYDIN	

ASSIGNMENT of U.S. Origin Patent Application (to Corporation) (or Limited Partnership)

WHERFAS, the undersigned, to wit:

1) Andrew Fire	
2) Sì Q. Xu	
3) Mary K. Montgomery	
4) Stephen A. Kostas	
5) Lisa Timmons	
(hereinafter collectively ASSIGNOR), has/have made an invention known as Dkt.	PMS 266628
and entitled. Genetic Inhibition by Double-Stranded RNA	
tor which an application for Letters Patent of the United States	
was executed even date herewith and is about to be filed in the United States F	Patent and Trademark Office
🖾 was filed on December 18, 1988 , Appln. No. 09/ 215, 257	;
AND WHEREAS The Carnegie Institution of Washington (hereinafter ASSI Limited Partnership duly organized and existing under the laws of the District of Querincipal office and place of business at 1530 P Street, N.W., Washington, DC 201	columbia and having its
interest therein;	

NOW, THEREFORE, in consideration of the Dollars (\$10.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the said ASSIGNOR, does hereby sell, assign and transfer unto ASSIGNEE, its successors, assigns and legal representatives, the full and exclusive right, title and interest to the said invention in the United States and all foreign countries, as described in the aforesaid application, and to the said application and to all continuations, divisions, reissues and substitutes of said application, together with the right of priority under the International Convention for the Protection of Industrial Property, Inter-American Convention Relating to Patents, Designs and Industrial Models, and any other international agreements to which the United States of America adheres, and ASSIGNOR hereby authorizes and requests the Commissioner of Patents to issue said Letters Patent to ASSIGNEE, for its interest as ASSIGNEE, its successors, assigns and legal representatives.

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PAT-1148 11/3:

AND ASSIGNOR hereby agrees to execute any papers requested by ASSIGNEE, its successors, assigns and legal representatives, deemed essential to ASSIGNEE's tull protection and title in and to the invention hereby transferred.

ASSIGNOR furthermore agrees upon request of said ASSIGNEE, and without further remuneration, to execute any and all papers desired by said ASSIGNEE for the filing and granting of foreign applications and the perfecting of title thereto in said ASSIGNEE.

NOTE: The undersigned hereby authorizes Pillsbury Madison & Sutro LLP of the above address to insert hereon any further identification necessary or desirable for recordation of this ducument.

Executed on the date(s) below indicated.

<u>Signature</u>	Date Signed	Witness
1) Name: Andrew Fire	+ 	
2) Name: Si Q. Xu		
3) L May (Montgomery Name: Mary K. Montgomery	x-1/29/99	X- Situin By fas.
Name: Stephen A. Kostas		*.
5) Name: Lisa Timmons		

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Please return signed/recorded to:
Pillsbury Medicon & Sutro LLP
Intellectual Property Group
Ninth Floor, East Tower
1100 New York Avenue, N.W.
Washington, D.C. 20005-3918

Ally. Dkt. PMS 258628	Client Ref.
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ASSIGNMENT of U.S. Origin Patent Application (to Corporation) (or Limited Partnership)

WHEREAS, the undersigned, to wit:

) Andrew F	Fire	
2) Si Q. Xu		
3) Mary K.	Montgomery	
4) Stepher	n A. Kostas	
and entitled for which ar	collectively ASSIGNOR), has/have made an invention known as Dkt. PMS 256628 d: Genetic Inhibition by Double-Stranded RNA in application for Letters Patent of the United States in application for Letters Patent of the United States ecuted even date herewith and is about to be filed in the United States Patent and Trace ed on December 18, 1998 , Applin. No. 09/ 215,757	demark Office;
	ND WHEREAS <u>The Carnegie Institution of Washington</u> (hereinafter ASSIGNEE), ⊠ a continuous of the District of <u>Columbia</u> and learnership duly organized and existing under the laws of the District of <u>Columbia</u> and learnership duly organized and existing under the laws of the District of <u>Columbia</u> and learnership duly organized and existing under the laws of the District of <u>Columbia</u> and learnership duly organized and existing under the laws of the District of <u>Columbia</u> and learnership duly organized and existing under the laws of the District of <u>Columbia</u> and learnership duly organized and existing under the laws of the District of <u>Columbia</u> and learnership duly organized and existing under the laws of the District of <u>Columbia</u> and learnership duly organized and existing under the laws of the District of <u>Columbia</u> and learnership duly organized and existing under the laws of the District of <u>Columbia</u> and learnership duly organized and existing under the laws of the District of <u>Columbia</u> and learnership duly organized and existing under the laws of the District of <u>Columbia</u> and learnership duly organized and existing under the laws of the District of <u>Columbia</u> and the laws of the District of the District of <u>Columbia</u> and the laws of the District of	corporation having its bacquire an

NOW, THEREFORE, in consideration of Ten Dollars (\$10.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the said ASSIGNOR, does hereby soil, assign the receipt and sufficiency of which are hereby acknowledged, the said ASSIGNOR, does hereby soil, assign and transfer unto ASSIGNEE, its successors, assigns and legal representatives, the full and exclusive right, title and transfer unto ASSIGNEE, its successors, assigns and all foreign countries, as described in the aforesald and interest to the said invention in the United States and all foreign countries, as described in the aforesald and interest to the said application and to all continuations, divisions, reissues and substitutes of said application, and to the said application and to all continuations, divisions, reissues and substitutes of said application, and to the said application and to all continuations. Convention for the Protection of Industrial application, together with the right of priority under the International Convention for the Protection of Industrial Assignors, and any other Property, Inter-American Convention Relating to Patents, Designs and Industrial Models, and any other Property, Inter-American Convention Relating to Patents, Designs and Assignors have a Assigned international agreements to which the United States of America adheres, and Assigned, for its interest as Assigned, its successors, assigns and legal representatives.

-1-

PAY-114B 11697

AND ASSIGNOR hereby agrees to execute any papers requested by ASSIGNEF, its successors, assigns and legal representatives, deemed essential to ASSIGNEE's full protection and title in and to the invention hereby transferred.

ASSIGNOR furthermore agrees upon request of said ASSIGNEE, and without further remuneration, to execute any and all papers desired by said ASSIGNEE for the filing and granting of foreign applications and the perfecting of title thereto in said ASSIGNEE.

NOTE: The undersigned hereby authorizes Pillsbury Madison & Sutro LLP of the above address to insert hereon any further identification necessary or desirable for recordation of this document.

Executed on the date(s) below indicated.

Signature	Date Signed	Witness
1) Name: Andrew Fire	·	
2) Name: SI Q. Xu		
3) Name: Mary K. Montgomery.		<u>. </u>
4) Alema A. Kostas Name Stephen A. Kostas	- Jan 20, 1999	Allesia J. Config.
S) Name: Lisa Timmons		

PAT-1119 11/97

Please return signed/recorded to: Pillsbury Madison & Sutro LLP Intellectual Property Group Ninth Floor, East Tower 1100 New York Avenue, N.W. Washington, D.C. 20005-3918

Atty, ükt.	PM3 256628	
	WH	Client Ref.

ASSIGNMENT of U.S. Origin Patent Application (to Corporation) (or Limited Partnership)

WHEREAS, the undersigned, to wit:

}	Andrew Fire	•
· (Si Q. Xu	
3)	Mary K. Montgomery	······································
l)	Stephen A. Kostas	
5)	Lisa Timmons	
he	reinafter collectively ASSIGNOR), has/have made an invention known as Dkt.	PMS 256628
אווכ	entitled: Genetic Inhibition by Double-Stranded RNA	
	which an application for Letters Patont of the United States was executed even date herowith and is about to be filed in the United States I was filed on December 18, 1998 , Applin. No. 09/ 215, 257	Patent and Trademark Office;
pri	AND WHEREAS The Camegie Institution of Washington (hereinafter ASS nited Partnership duly organized and existing under the laws of the District of Camegia office and place of business at 1530 P Street, N.W., Washington, DC 20 prest therein;	Columbia and having its

NOW, THEREFORE, in consideration of Ten Dollars (\$10.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the said ASSIGNOR, does hereby self, assign and transfer unto ASSIGNEE, its successors, assigns and legal representatives, the full and exclusive right, title and Interest to the said invention in the United States and all foreign countries, as described in the aforesaid application, and to the said application and to all continuations, divisions, reissues and substitutes of said application, together with the right of priority under the International Convention for the Protection of Industrial Property, Inter-American Convention Relating to Patents, Designs and Industrial Models, and any other international agreements to which the United States of America adheres, and ASSIGNOR hereby authorizes and requests the Commissioner of Patents to issue said Letters Patent to ASSIGNEE, for its interest as ASSIGNEE, its successors, assigns and legal representatives.

PAT-1146 11/57

AND ASSIGNOR hereby agrees to execute any papers requested by ASSIGNEE, its successors, assigns and legal representatives, deemed desential to ASSIGNEE's full protection and title in and to the invention hereby transferred.

ASSIGNOR furthermore agrees upon request of said ASSIGNEE, and without further remuncration, to execute any and all papers desired by said ASSIGNEE for the filing and granting of foreign applications and the perfecting of title thereto in said ASSIGNEE.

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Executed on the date(s) below indicated.

Signature	Date Signed	<u>Witness</u>
1) Name: Andrew Fire		
Name; Si Q. Xu		·
3) Name: Mary K. Montgomery		·
Name: Stephen A. Kostas		
5) <u>Liga D. Tummer</u> Name: Lisa Timmons	×1/22/00	+ Audith Caralle

PAT-1148 11/97